In The Claims

What is claimed is:

1. A transducer for being remotely positioned in a fluid within a vessel and for sensing a pressure generated by the fluid in the vessel, the transducer comprising:

an antenna for capturing an externally-generated interrogation signal and for transmitting a response signal;

a response circuit coupled to the antenna for receiving the interrogation signal and for generating the response signal in response to the interrogation signal; and

a sensor coupled to the response circuit for sensing the pressure generated by the fluid and adjusting one or more electrical characteristics of the response circuit in relation to the sensed pressure;

wherein the response circuit causes a delay in the generation of the response signal so that the response signal is transmitted at a time separated from and following a transmission of artifacts of the interrogation signal.

2. The transducer of claim 1, wherein the response circuit comprises a surface acoustic wave (SAW) delay line.

3. The transducer of claim 1, wherein the response circuit comprises a surface acoustic wave (SAW) bandpass filter.

4. The transducer of claim 1, wherein the transducer further includes means for attachment to an inner wall of the vessel.

5. The transducer of claim 4, wherein the antenna comprises a shape memory alloy.

6. The transducer of claim 5, wherein the antenna is insertable into the vessel, and changes shape become affixed to an inner wall of the vessel in response to a characteristic of the fluid.

7. The transducer of claim 5, wherein the shape memory alloy is formed as a wire and enclosed within a lumen.

8. The transducer of claim 5, wherein the shape memory alloy is NiTinol.

9. The transducer of claim 2, wherein the SAW delay line includes:

a first interdigital transducer (IDT) coupled to the antenna for receiving the interrogation signal and generating a first SAW; and

a second IDT positioned at a distance L2 from the first IDT, the second IDT coupled to the sensor for receiving the first SAW and transmitting a response SAW to the first IDT;

wherein the first IDT generates the response signal from the response SAW, the antenna transmits the response signal, and signal characteristics of the response signal indicate a property of the fluid.

10. The transducer of claim 9, wherein the SAW delay line further includes:

a reflector positioned at a distance L1 from the first IDT, the reflector for receiving the first SAW and reflecting a reference SAW to the first IDT;

wherein the first IDT generates a reference signal from the reference SAW, the antenna transmits the reference signal, and signal characteristics of the reference signal as compared to signal characteristics of the response signal indicate a property of the fluid.

11. The transducer of claim 9, wherein the signal characteristics include at least one of signal amplitude and signal phase.

12. The transducer of claim 2, wherein one or more electrical characteristics of the response circuit include at least one of resistance, inductance and capacitance.

13. The transducer of claim 3, wherein one or more characteristics of the response signal associated with a resonant frequency of the response circuit may be used to determine a property of the fluid.

14. The transducer of claim 1, wherein the transducer further comprises a deflecting spring member movable in proximity to the sensor in response to the pressure generated by the fluid, wherein a position of the deflecting spring relative to the sensor determines the one or more electrical characteristics of the response circuit.

15. The transducer of claim 14, wherein the deflecting spring member comprises a conductive encapsulant movable in proximity to the sensor.

16. The transducer of claim 15, wherein the conductive encapsulant comprises a conductive silicone.

17. The transducer of claim 14, further comprising amplification means coupled to the deflecting spring member for generating the pressure to be sensed.

18. The transducer of claim 17, wherein the amplification means comprises:

a lumen containing an incompressible fluid in a sealed lumen tube, a portion of the lumen tube having deflecting diaphragm coupled to the deflecting spring member, wherein the deflecting diaphragm is more compliant and undergoes a larger deflection than the lumen tube in response to a generated pressure.

19. The transducer of claim 18, wherein the ratio of a deflection of the diaphragm to the deflection of the lumen tube in response to the generated pressure is inversely proportional to the ratio of a surface area of the tube to a surface area of the diaphragm.

20. The transducer of claim 1, wherein the artifacts include at least one of one of more reflections of the interrogation signal and one or more undesired replies to the interrogation signal.

21. The transducer of claim 1, wherein the response circuit causes a delay following the interrogation signal of a predetermined period.

22. The transducer of claim 21, wherein the predetermined period is approximately 2 microseconds.

23. A system for remotely sensing a pressure generated by a fluid within a vessel, comprising:

a scanner for generating an interrogation signal and receiving a response signal, the scanned being positioned externally with respectect to the vessel; and

a transducer positioned within the vessel, the transducer including:

an antenna for receiving the interrogation signal and for transmitting the response signal;

a response circuit coupled to the antenna for receiving the interrogation signal and generating the response signal in response to the interrogation signal; and

a sensor coupled to the response circuit for sensing the pressure generated by the fluid and adjusting one or more electrical characteristics of the response circuit in relation to the sensed pressure;

wherein the response circuit causes a delay in the transmission of the response signal so that the response signal is transmitted at a time separated from and following transmission of artifacts of the interrogation signal.